

AVIATION WEEK

JAN. 26, 1948

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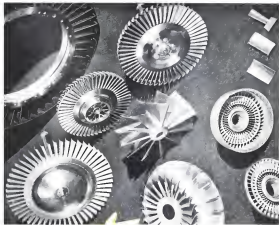


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Left to Right: George W. Truman, Clifford V. Evans, Jr.



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We have the equipment for forming and machining the complex contours of such wheels, and our engineers know how to design them for highest operating efficiency.

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That's because B. F. Goodrich nylon tires save weight and make possible increased payload. One leading airline reported that a change to B. F. Goodrich nylon tires produced an increase in revenue more than to use the cost of the tires themselves.

B. F. Goodrich nylon tires are widely used on many other types of

planes, both commercial and military. In addition to weight-saving, they offer other outstanding advantages.

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Illustration by George H. R. R. R.



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THE AVIATION WEEK

NEW BOOK—Events in Washington have followed in such rapid succession as to make it apparent that governmental relations with aviation are not just being a new page; they are likely to constitute a new book.

First was the Lend Lease disaster, then the Air Policy Commission report. Last week came the submission of resignations by CAB member Harlow Branch and CAA Administrator T. P. Wright. The Air Policy Commission's proposals for a reorganization of the governmental aviation establishment as yet are merely that, with no indication of immediate steps to implement them.

But the CAB membership changes are already a tangible factor and so, too, is the resignation of Wright. Although Wright's plea to quit was not immediately accepted by the President, few believe he could be persuaded to remain at his post for long.

Even the two things taken together—the CAB vacancies and Wright's resignation—could mean a sharp change in the direction of policies and procedures. Acceptance by the President of the Policy Commission's recommendations for a Department of Civil Aviation would make such a change in direction almost certain.

MARKING TIME—Meanwhile, action takes new on policy matters up before CAB and CAA will seem a little bolder. With Clarence Young's place in the Board still unsettled, CAB is a three-man body. Even with four men, CAB fell behind in its work. There is no reason for optimism to believe that the present three members can move faster than the full Board was able to do.

There also could be an undesirable reference on the part of Ryan, Lee and Branch to attempt to sweep away before the advent of the three new members the knottiest problems that so long have been before the Board.

After the President succeeds in filling the spots of Young, Lend Lease and Branch, the Board perhaps would have a new voting majority.

The situation on the CAA side is somewhat similar. Wright, while acknowledged as a sound and progressive thinker, has not been able to keep his on the whole sprawling CAA organization. While he "streamlined" it, it still covers such a wide field that major policy decisions sometimes must be made on lower levels by men who have not always been aware of, or sympathetic to the Administrator's thinking. Many of these men credit him Charles I. Smith, deputy administrator, who also now has moved out of CAA, at least temporarily.

Result is an area for change in CAA policy and administration as wide as that on CAB.

TALEY SHEET—A quick glance at only a few of the pending matters on CAB and CAA indicates the effect on practically all phases of the industry of any broad changes of view that might occur within either agency.

Both economic and safety matters of vital concern to air transport were before CAB when its membership began disintegrating. The jockeying for position and power between the scheduled, certificated lines and the noncertificated operators has by no means reached the final round.

Either as offshoot or as integral part of this (depending on viewpoint) is the cargo situation.

The Board was still involved in a mental wrestling with the safety recommendations of the special Presidential inquiry when Lend Lease, chairman of the safety group and most interested in pushing its proposals, was passed over.

This leaves the remaining three to grapple with such explosive issues as temperature accountability, fire prevention and minimum runway lengths.

Just when the Board probably thought it had disposed of the surface carrier matter largely by ignoring it, it was thrown back by the Air Policy Commission.

CAA'S PROBLEMS—CAA shares with CAA another whopping headache that affects manufacturers as well as air carriers. This is the continued tinkering with Part 94 of the Civil Air Regulations which establishes certification standards for transport planes.

No one seems happy about Part 94, the supposedly effective version. Much of 94b represents CAA thinking, so top-level changes in that agency might bring a result.

CAA has its exclusive problems: navigation and landing aids, the lagging airport program with its regulations that have been written twice, amended and are now being amended again, nighttime overflight regulations, safety inspection, and enforcement of private flying regulations.

Despite numerous criticisms, generally by indifference, of Wright's administration, changes for the better that have been made as CAA has a crowd about through its actions. But its success will still need a basket full of worms.

OVERHAULING POSSIBLE—There is to be no reckoning with the possibility of a thorough going overhaul along the lines suggested by the Air Policy Commission.

Wright perhaps could be persuaded to stay, or a few months longer while plans were afoot. CAB could be left to struggle along as a three-man Board while legislation was prepared to create the Civil Aviation Department.

There are no odds yet as to whether the President will name him to the Policy Commission's recommendation or, if he does, what the congressional reception is likely to be. If it looked like a controversial issue, likely to demand extended consideration and debate, chances of passage would be slim. Congressmen want to go home and start politicking each other year.



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All the outstanding advantages of VHF communication and navigation are combined in two new systems designed and manufactured by Aircraft Radio Corporation.

THE TYPE 15A VHF OMNI-DIRECTIONAL RANGE RECEIVING SYSTEM provides an unbroken aural picture of course from the new VHF Omni-Directional Ranges, as well as operation on VHF Forward Localizers and Visual-Aural Aural Ranges. Simultaneous voice transmission is included on these ranges. The touchy A.R.C. Receiver makes it possible to receive VHF communications on any frequency selected while in flight—no need for several receivers to cover the entire VHF band.

THE TYPE 16 VHF TRANSMITTING SYSTEM normally is used in combination with the Type 15 to provide complete 2-way VHF Communication—or it may be used alone for dependable, powerful VHF Transmission. Additional transmitters may be added to cover a wider range of frequencies if such coverage is required. Units of the Type 16 System have been Type-Certificated by the CAA for use by scheduled airlines. Yet these light weight and rugged units make them ideally suited to the operational requirements of non-scheduled aircraft. Other combinations of A.R.C. equipment are available to meet every operational need.

The dependability and performance of these VHF communication and navigation systems greatly increased safety in flight, since efficient aircraft operation directly A.R.C. for post-accident assistance.



Aircraft Radio Corporation

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NEWS DIGEST

DOMESTIC

Month-long negotiations between TWA and the Airline Negotiations Association broke down last week and union spokesmen said a state of negotiations on circumstantial flights was possible.

Air Force has concluded its Proving Ground Contract with the Air Materiel Command in the interests of economy. Formerly an independent command, AFCC tests the tactical proficiency of new aircraft and weapons throughout the Air Materiel Proving Ground. The facilities at Eglin Air Force Base, Fla., will continue to handle its present function.

An increase in postal post office is now being suggested under the direction of Postmaster General John M. Donaldson. The service will begin in soon as international agreements necessary for the service are ratified.

FINANCIAL

Borch Aircraft Corp. reports net income after taxes of \$519,255, against loss of 10 cents a share on 480,000 shares outstanding for the quarter ending Dec. 31. This compares with a loss of \$616,581 for the same period last year.

Airline insurance companies estimate a gross loss of \$550,000 for 1947 through heavy payments for aircraft accidents. Casualties cost the companies more than \$4,600,000, flight losses to which no loss were lost another \$1,000,000 and legal fees for passengers for company liabilities cost more than \$1,000,000.

Dellwood Aircraft of Canada, Ltd. reports net loss of \$616,508 in Canadian currency for the year ended Sept. 30 compared with a net income of \$145,547 for the previous fiscal year.

FOREIGN

BOAC has announced plans to operate Constellation service between New Doral Airport, Montreal, to Fiji via Auckland, Bristol, England. The action is being taken largely to save dollar expenditures.

United Kingdom and the Philippine Republic have concluded a civil aviation agreement in Manila. The pact covers routes from the Philippines to England and Australia and from Manila to Hong Kong.

Philippine government has given official approval for establishment of an Arab and a Jewish airline. The Arab airline, Eastern Airways, Ltd., will operate to Arab countries, while the Jewish company, Palestine Airways, Ltd., will fly to European capitals.



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4 out of 5 of the propellers you count will have the Sensenich trade mark on the blades.

Sensenich is the world's largest manufacturer of wood aircraft propellers. Sensenich propellers are standard equipment on more new personal planes than any other. They are chosen more often for

replacement than any other. Sensenich propellers are solidly up to meet in the development of new type aircraft by designing new propellers for highly specialized requirements.

Sensenich PROP-SHOPS repair most wood propellers of all makes than any other company. All this adds up to one thing: you'll be happier if you keep a Sensenich propeller on the end of YOUR ship.

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THE ALLOY THAT CREEPS BEFORE IT FLIES

► This metal alloy goes through a painstaking examination for designers of aircraft engines. It's undergoing a high temperature "creep" test in the Wright Aeronautical Corporation metallurgical laboratory. For months at a time it will be stretched under a tension of thousands of pounds per square inch—at temperatures that will keep it white hot. The test machine can measure as little as 5/100,000 of an inch stretch and control the heat within

a tolerance of one degree Fahrenheit. • The "creep" test is conducted on hundreds of specimens to determine how much each will stretch when subjected to extreme loads and temperatures for thousands of hours. It provides condition data that the metal will encounter in actual operation. • Another example of the intensive talent with which Wright Engineers pioneer developments in aircraft materials and manufacturing engines.



POWER FOR AIR PROGRESS

WRIGHT

Aeronautical Corporation • Wood-Ridge, New Jersey



T. P. Wright to Leave CAA Post For Cornell Air Research Group

Administrator will direct air laboratory and research foundation; Lee and Anderson are considered likely candidates for appointment to post.

Resignation of Theodore Paul Wright as Administrator of Civil Aeronautics by on President Truman's desk, last week, still unaccepted. It was understood Wright will remain in his post for several weeks to complete some of his duties, before going to his new job as director of the Research Foundation of Cornell University, Ithaca, N. Y., including the newly N. Y. Aeronautical Research Laboratory.

Frederick B. Lee, deputy administrator of CAA, and former executive assistant to Wright, appeared the most likely choice within CAA to succeed Wright. Secretary of Commerce A. C. Benson has a preference for nonpolitical aviation appointments. Lee has a long record as a New York attorney, private pilot, and is a New York Airlines Administrator before coming to CAA.

Name of William A. Anderson, Pennsylvania state aeronautics director, and former president of the National Association of State Aeronautics Officials, was being mentioned in the aviation industry as another capable prospect for the CAA top post. Anderson is a member of the CAA's non-scheduled Flying Advisory Committee, and has wide understanding administrator's record in his own state for flying safety, air mailings, airport construction, and other phases of aviation development work.

► **Wright Salary.**—Wright's new Cornell job carries a salary approximately three times that of his CAA \$50,000 annual stipend.

He has told friends that he felt he could no longer afford to remain in government because of the expenses connected with his job not covered by his salary. Wright has been continuing in Washington administrative posts since 1941, when he was named assistant chief, aircraft section, Office of Production Management. He was later named assistant chief aircraft section, War Production Board, and still later became director of Aircraft Resources

credited however with liberating pilots' requests for permits, setting up an advisory committee on new scheduled flying, appointing large numbers of flight examiners and factory inspectors from industry to take over the vast burden of inspection duties from the CAA's general inspectors, and other activities to promote personal aviation.

He sought to stimulate development of better personal planes, through CAA development contracts, but this proposal met with a chilly industry reception.

Wright also became involved in the storm controversy between Civil Aeronautics and the VIII Air Corps, which found CAA ineffectual even in operation of CAA developed Instrument Landing System on the opposite side of the fence from a large segment of the aviation industry and congressional aviation leaders who predicted that World War II developed Ground Control Approach radar system. Controversy that has resulted in double subsidies of ILS and CAA's remote airports and management improvement of latter ILS work.

Other factors behind the swift CAA administrator's salary reduction is expected into Wright's decision to resign. Another factor might be credit a somewhat "hot air" attitude about criticism of CAA and top and bureaucracy short coming, much aired at the administrator, last office at the "Old Guard" headquarters as indication to change under the civil aviation setup which leaves the administrator subordinate to two Commerce officials, the Secretary and the Assistant Secretary of Commerce for Air.

Whether Wright's departure may have any bearing on acceptance of the President's Air Policy Commission's recommendations for sweeping revision of the status of aviation agencies as federal government will be watched closely in observance.

► **Civil Air Department.**—The President's Commission's recommendations of a Department of Civil Aviation under the Department of Commerce, with a Secretary of Civil Aviation, on the more administrative level as Secretary of Air Traffic and Navy. It called for establishment of independent Civil Aeronautics Board and Air Safety Board, to separate the handling of safety and economic regulations. Under the Department of Civil Aviation would be



T. P. WRIGHT

Control Office, WFB. In the fall of 1944 he was appointed to his present post.

Before coming to Washington, he had a 20 year career in aircraft engineering and executive posts, first with the Curtiss Aeroplane and Motor Co., and later with its successor, Curtiss-Wright Corp., serving as vice president of the latter company, at the time he entered government service. As an engineer he is probably best known for his work in development of the Curtiss Tangar, a plane which was the 5100-000 Cagney-Lucas Foundation first prize in a 1929 competition. He also aided in development of many other military and civil aircraft.

► **Wright Policies.**—Taking over CAA in the critical period of converting civil aviation to a postwar level Wright set up several policies of regulation which were frequently ignored as short created by some of his own reaction on. "Old Guard" CAA administrators. Despite this handicap Wright can be

ENGINEERING & PRODUCTION

Long Range Procurement Plans Suggested for Aircraft Industry

Air Policy Commission sees peering of manufacturers to 70-group Air Force plan, production of essential military aircraft, is answer to financial plights.

Getting the aircraft manufacturing industry directly into the Air Force 70-group plan, providing for long-range five-year procurement and helping mobilization planning into the aircraft production system will, in the opinion of the President's Air Policy Commission, provide a sound military industry structure on which to base our national defense.

If the aircraft manufacturing industry can be permitted to produce that quantity of military aircraft (30-40 million in various periods) normally demanded to support the national security, its financial problems (585 million loss in 1946, \$10 million loss in 1947) will

be solved and the minimum production level required for rapid expansion in an emergency will be maintained, the Commission believes.

Planning Problems.—The Commission feels strongly that the major problems of the industry since the war (as well as in pre war years) has been a lack of plan, especially on the part of the procurement agencies. To a large extent this has resulted from restrictive legislation, which has prevented such planning in the past. The Commission recommends that new laws be enacted. Comprehensive procurement orders, long used by both services, must be modified to permit long lead-in to creation in the pro-

duction picture and to permit the concentration of business on certain major companies. Such planning would provide the industry and ultimately only facilitate to production levels in national emergency and immediately preserve valuable design and production talent for future conflicts.

At the cost of this problem is the question of the government to provide funds only for a single fiscal year. That expense has already done new aircraft, growing increasingly complex, cannot be developed to a production stage in a period of less than three-to-five years.

Conservation.—Conservation of resources is an extremely important and increasingly difficult design and way through the testing, research and development phase. Conservation requires conservation of the Government's resources and the Bureau of Aeronautics with long and contract authorization for five year periods (instead of the current two fiscal years). Congress should retain an overall control over the money for the national appropriation and for the long-term production of such contracts. The services would be charged with obligation of specific work, there is five-year program and such would be future plans.

Mobilization Problems.—The Commission believes that industrial mobilization planning should be given the same priority status in research, development and procurement within the services because of its vital reduction in the time required for the acceleration of production in emergency and accompanying reduction in required combat aircraft inventories. It requires testimony for crisis control and capability as the services work out a new opportunity for advancement within the services as they officers. Complete production plan (including sub-construction, bills of material, tooling, sub-assemblies, etc.) for each type of aircraft model of each basic type of aircraft assembly in a service plant should be prepared and kept up-to-date and plans for acceleration of production rates for current models be prepared by contract for emergency use.

With such mobilization planning going on previously for acceleration of such plans in the middle of a fiscal year through the definition of an emergency by the President and automatic approval of such expenditures by the Congress. This plan would require inclusion in such annual budget of a force representing such expanded production which, although not intended for purchase at the time, would be approved by the Congress for immediate passage in the event of an emergency during the current fiscal year.

Detailed recommendations of the Commission include:

• **Development Contracts.**—Due to the large volume inherent in aircraft research and development, this cost-

placed job contract should be used. In addition, the contractor should be permitted to retain certain design rights in his inventions as an incentive and the long-established practice of present cost-plus contracts including all rights be abandoned.

• **Production Contracts.**—Incentives should be provided for the manufacturer to produce at low cost and low prices. Where long-term contracts are used for low-volume production, the additional cost of such tooling should be entered as mobilization planning costs and so absorbed by the services.

• **Procurement Contracts.**—To secure consistency of effort, each manufacturer should be permitted to have one type in quantity production, one in the development stage and a new design in development at the time. The type in such process should be determined by the needs of the services and the individual plans of the manufacturer.

Generally, the production contract should be awarded to the developing company, and only that company be responsible for all subsequent design changes. Where such production contracts would overload the capacity of a given firm, the services should acquire a substantial design and development facility be subcontracted and the parent firm still necessary engineering assistance and design changes to the subcontractor to enable the latter to produce the design economically and efficiently.

• **Protection Disposition.**—The services are urged to avoid further production expenses as the current concentrations of capacity as the services work out a plan and to encourage the use of the partially disposed reserve plants.

• **Reserve Capacity.**—No further losses of reserve aircraft and engine plant capacity should be permitted. The services should be permitted to have 10,200,000 square feet of airplane plant and 11,700,000 square feet of engine plant be maintained for continued availability. The program for the acquisition and change of 65,000 ground support machine tools should be completed.

• **Collaboration.**—The overhaul of military aircraft under contract with civilian agencies should be permitted. They should be encouraged by the services because of savings in the cost of such work and the training and equipping of such civilian groups for use in emergency.

WNA Sees Good Year
Northwest Airlines President Carl Hewitt has indicated that recent passengers on WNA's domestic routes over America 91 percent from 669,000 in 1947 to 1,088,000 in 1948. Presently, American Airlines had increased its 1948 schedule to January 26, 1948.

Piasecki Names Rupert Materials Manager

Patricia Halopsey, Chief, Morbex, Inc., has appointed Rupert A. Piasecki, materials manager of the United States Navy, to be responsible for procurement and planning. Under his direction will be sub-departments on material, construction, production, tooling, purchasing, subcontracting and stores.

Piasecki's appointment was made necessary by the company's combined expansion and expansion as an independent supplier of aircraft components rather than as an organization concerned only with research. He formerly was purchasing agent for Ford and in at one time in the 20-year career in aircraft manufacturing was production manager at Morbex.

In other personnel actions:

• **Adrian E. Martin** has named Dr. John C. Halopsey, manager of research and development, to be in charge of the company's research and development. Dr. Halopsey has been appointed director of research. Dr. Halopsey formerly was in charge of research and development at Morbex, Inc. He was formerly in charge of research and development at Morbex, Inc. He was formerly in charge of research and development at Morbex, Inc.

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CIO Tells Aviation New Wage Demands

Aircraft and aerospace manufacturing contracts with the United Auto Workers, Aircraft and Agricultural Implement Workers, CIO, has been moved under by the union's international executive board of new demands for wage increases and other economic benefits expected when current contracts expire.

Topping the list is a demand for a 15-cent hourly wage increase which the UAW CIO advocates will be necessary in May to remain the workers' "living wage" in the face of inflation. In 1946, when Congress ordered price controls, the UAW CIO advocates, local union have been advised, when beginning negotiations, to ensure the right to reject the demand if the cost of living between one and May may vary greatly from the union's calculation.

The UAW CIO 1946 three-year wage program contains three other demands: (1) an increase in the cost of living between one and May may vary greatly from the union's calculation; (2) guaranteed wages; and (3) three week paid vacation after five years of service.

Requests for pension plans were left to the discretion of the company at groups of local deals with individual companies. At General Motors, the UAW CIO will ask that 10 cents of the 15-cent hourly increase be applied to a retirement plan.

New Engineering Service

A new aspect of aircraft engineering services is being added, including those of the costs of maintaining, maintenance organizations at U. S. factories producing their components, is provided by a Los Angeles engineering group.

Glenn S. Smith, president of the engineering service, 2175 Sepulveda boulevard, has begun (including foreign air) local companies with a centrally-planned program to represent their design, development of taxpayers now on order with major plane builders. His fee depends on a sliding scale, a percentage of work done for the office for periods of four to five (estimated) percent to 10 percent and per month. Services offered include aircraft inspection, expedition of parts, maintaining records, preparation of technical reports, supplying data on new design-developing changes with CAA and manufacturers, procurement of parts



MILITARY MARTIN 2-02 OFFERED

Delivered with details of a military cargo version of the Martin 2-02 transport at various base with 6 ft. by 8 ft. loading door. As a military transport, 40 cubic feet of cargo space can be used. A typical version accommodates 16 crew members and has a maximum altitude of 11,000 feet. The craft can carry a 51 ton payload and 1,500 gallons of fuel, sufficient for a 1,200 mile range. Commercial version of the 2-12 has been demonstrated to Air Force, Navy and Marine Corps officers at Wright Field and Washington National Airport.

Rocket Researchers Sift Fuels To Reduce High Consumption

Nitric acid seen offering distinct advantages on basis of specific consumption by weight and by volume . . . Various fuels are evaluated.

By ROBERT McLEARRIN

Excessively fuel consumption of the rocket motor (for example, 14.5 lb. of fuel per lb. of thrust per hr. in the V-2) poses the major rocket research problem. Although at its solution has been several ground paths since the rocket became a major military weapon. One of these is the utilization of high energy fuels, which produce a maximum heat from a minimum weight.

On the basis of high specific impulse (pounds of thrust created per pound of fuel burned per second) a mixture 20 percent liquid hydrogen and 80 percent liquid oxygen produces a specific impulse of 150 sec.—highest at the rocket fuels generally available. However, specific impulse is only one criterion for use in the selection of a rocket fuel. Of equal or greater import are the density and volume of the fuel, exerting a direct influence on the size of the rocket-propelled missile and the weight and complexity of the various parts of its fuel system. It is in this connection that nitric acid warrants close study.

► **Fuel Consumption**—A study of nitric acid as a source of oxygen for a rocket fuel in comparison with liquid oxygen (generally in use in current U.S. rocket motors) and peroxide (used in the V-2 rocket motor and in the Nike 163 Walleye rocket motor) was made by Helmut Zehmsdorf of the German Academy of Aeronautical Research, a translation of which by the National Advisory Committee for Aeronautics is now available.*

On the basis of the total heat liberated, liquid oxygen at 47 percent better than nitric acid and 56 percent better than peroxide when burned with a liquid hydrocarbon. However, since only 75 percent of the energy of the liquid oxygen is lost through dissociation, more than twice the loss of nitric acid fuel and more than four times that of peroxide fuel. In peroxide, another 15 percent is lost through recombination, a total heat loss of 45 percent of the liquid oxygen fuel.

That of the total 2,900 kcal/kg. of energy liberated by combustion of liquid oxygen and a liquid hydrocarbon, only 1,300 kcal/kg. are available as

laminar energy in the nozzle jet of the rocket motor. In comparison, a nitric acid-hydrocarbon rocket fuel provides 1,000 kcal/kg. in laminar energy, a difference of only 10 percent in the two fuels.

► **Nitric Acid Advantages**—It is on the basis of specific consumption by weight and by volume that the superiority of nitric acid is advanced. The consumption of liquid oxygen in a rocket engine requiring at 35 atmospheres pressure is 6.5 kg./ton sec. compared with only 4.6 for a nitric acid fuel. On a volume basis, oxygen is consumed at the rate of 0.5 liter/ton sec. while nitric acid is used at a rate of only 1.35 liter/ton sec.

Practical significance of the lower volumetric consumption lies in the greatly increased loading energy which can be stored in a tank of a given frontal area, using nitric acid as a source of oxygen rather than liquid oxygen. Assuming a heliobitic loading per unit area of 0.5 kg./kg. cm. and a propellant weight to takeoff weight of 0.8, the nitric acid motor would have a range more than 17 percent larger than the liquid oxygen motor.

Other significant advantages of nitric acid as an oxygen source, for rocket motors, include wide availability, desirable ignition behavior, advantageous freezing point of -42 deg. C.; ease of obtaining complete combustion, stable structure dissolving igniter/detonation products, rate of transportation and storage and a low vapor pressure. An important consideration is the fact that a wide variety of readily available hydrocarbons and other organic compounds capable of easily reacting with nitric acid have been developed and many of them tested. Spontaneous re-ignition propellants eliminate the need for an igniter system within the rocket motor, thereby further simplifying its construction and cost.

► **Objections Answered**—Wide spread objection to nitric acid is a highly corrosive fuel requiring special nozzles or containers for handling has been based on the use of anhydrous material. The water present acts as a catalyst making the acid to attack container metals.

In a rocket fuel, only a highly concentrated nitric acid is used, the freedom from water preventing corrosion. Nitric acid in this concentrated form comes mainly from anhydrous nitric acid available, to increase purity and prevent corrosive action. Low viscosity, this characteristic is due to aluminum and chlorine in progressively greater degree. However, this feature of characteristic makes necessary the use of nonmetallic containers for storage, as aluminum-hydrogen atmosphere would dilute the contents and initiate an acid-metal action. Ceramic materials, such as porcelain glazed stainless, baked enamel and glass are important to nitric acid in even diluted form.

Another objection to nitric acid, its toxic danger to personnel, exists only at comparatively low temperatures, when it combines with oxygen from the atmosphere to form nitrogen dioxide peroxo gas. However, at combustion chamber temperatures above 1,600 deg. C., practically complete decomposition of the nitric oxide takes place.

► **Nitric Fuel Improved**—Improvements in nitric acid rocket fuels have already been demonstrated as feasible by dissolving nitrogen dioxide and nitrogen peroxide in nitric acid, the density of the latter can be raised from 1.52 to 1.62, the volumetric fuel consumption lowered 64 percent, and the gravimetric consumption lowered 24 percent. These factors also lower the freezing point and improve the ignitability of the fuel.

Addition of a few percent by weight of iron tetrachloride can produce a substantial reduction in the corrosion decay time, which has already been demonstrated to be only one thousandth of a second. This last practice, if further expanded, may permit the design of intermediate rocket engines a "long" weight configuration, with only increased range over present design.

REFERENCE

*Zehmsdorf, Helmut: Rocket Power Plants Based on Nitric Acid and Their Specific Propulsive Weight. NACA TM 1145.

STEEL DATA

The Engineering Data Book, Sheet D-1, "Steel," published by Aircraft Alloy Steels, published in November, December 12, 1947, are based on material specified by L. C. Boyd, Alloy Steel Committee of the General Motors Steel Corporation. This information was authoritatively compiled due to space exigencies.

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Sold for single and descriptive folder to Wire and Cable Department, United States Rubber Company, 1100 Quaker of the Americas, New York 20, N. Y.

*Aug. 12 to Apr. 1951



UNITED STATES RUBBER COMPANY



Airspeed Liner New Export Rival

Competing with U.S. makers, British company produces versatile high-speed plane featuring advanced engineering refinements.

By ALBERT E. SMYER, JR.

British European Airways' increased intention to order from 20 to 30 Airspeed Argosies, puts this new "big duckling" of the British Ministry of Supply and Production well in the forefront of the race for orders from airlines on the Continent.

Featuring high cruising speed to go with reported handsomest advantages for the operator and passenger, and various seating arrangements from 24 to 46 passengers in both pressurized and unpressurized versions, the Argosy may well prove to be a unique rival in export sales of the American twin-engine transports now in that market. (Continued) Value now 80 percent of the leading loads at the cost of the outer wing. An overhead ratio of 21.2 has been obtained.

By preserving laminar flow, its back turned trailing edge, a very low level of parasite drag has been achieved. Here the advantage of the twin engine layout, in combination with a large span, can be seen, the span of detailed area behind the profile is represented only 16 percent of span.

Cleanliness of lines and construction of skin have been emphasized. More refinements of detail adduce unnecessary drag.

It is believed that the slightly increased construction costs will, when spread over five years or more of operation, be offset by added revenue-gaining miles covered at the greater speed.

away than any other single factor.

Since the Argosy's wing has been designed to attain a high percentage of laminar flow, a very rigid skin surface was needed, and the structural requirements linked up well with those required to keep the overhead ratio at a high figure. Skin drag can only be avoided by the use of a thick and stiff material, and it was found that it would be wasteful to cover a wing in this manner unless the skin structure itself was used to a maximum extent in dealing with bending and torsional stresses.

In this wing, skin thickness and stringers following have been carefully guided along the span and the skin, with an additional, total area 80 percent of the leading loads at the cost of the outer wing. An overhead ratio of 21.2 has been obtained.

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quite apart from the value of this speed itself—once high utilization and serviceability efficiency is easily achieved by lowered costs.

Considering the component parts of the plane, various design characteristics were found to embody interesting details.

► Fuselage—Structurally, the pressurized fuselage is of conventional form, with skin stiffened by built-up frames and stringers. Majority of the stringers are Z-section profiles, but are separated, in groups of three, by Z-section channel sections to give additional strength. At wing root stations there are two rectangular aluminum frames, which are built up from members to carry wing loads. Along such loadings, which are in a panel some 18 inches below window line, there is a board duct for ventilation. Special box structures provide additional strength at window cut-outs. Although the cross-section of the fuselage changes considerably throughout its length, the structure remains essentially similar. The rear baggage compartment will form the passenger hold.

Passenger entry through an overhead door on the port side at rear of cabin, and this door is supported by an integral strut. Similar struts are used also on the door to rear baggage compartment and to forward overhead door and for crew entry and for loading forward baggage compartment. In addition, there are two emergency exits above window level.

► **Cover Section**—Center portion of the wing is built up around two plate webs with curved L-section spar caps. Intersecting ribs are of the diamond type, those in the center section being cut only for the installation of auxiliary fuel cells in the tunnel so formed.

Attachment of the center section to the fuselage is made through eight high-tensile steel-shaft fittings, four attached vertically outboard of fuselage, below the lower, while diagonally attached fuselage fittings take into leading stringer are joined by heavy gage forged mild-steel members welded to the side of fuselage skin and to center section. The three inner ribs in the center section have lock and lag attachments to fuselage rig structure for transmission of (compressive) loads where fuselage is not easy to take the wing.

► **Outer Wing**—Two outstanding features are listed here. Attachment is made to the center section vertically through the rear steel, and the fuel tanks at each end are an integral part of the structure. There is no direct connection between the center section and the outer wing spar, though there are lock fittings for transmission of lift and torsion loads. Remaining stresses are transferred through joint plates with spigot bolts and spools. Thus, the outer wing section is easily and quickly removed.

Outer wing spars are similar to those used in center section, the ribs being progressively lightened, by machining, towards wing tips. Outboard of the

tanks the interrib ribs are joined below members, and the extruded stainless are faired out from front spar to rear spar as indicated towards wing tips. No thickness varies between 14 and 16 gage over the wing surface, depending on the stresses there.

While the leading edge structure at the center section is of the steel type, with access doors hinged forward in the understructure, that of the outer wing is designed for thermal anti-icing and has novel corrugated inner skin spars joined as parallel-chord main ribs. Hot air in the anti-icing system flows between corrugated, and outer skin.

► **Fuel Tanks**—The wing structure with its heavy gage skin is used to hold itself naturally to the mobilization of integral tanks, in the comparatively thin wing sections, offering a worthwhile saving of weight. Normal fuel load is 1,500 gal in two tanks. These tanks are well outboard of the engine nacelles and are adequately free from disturbance effects due to heavy loadings.

Spar webs form the front and rear walls of these tanks, with a ventilated cavity between front spar and the in-relying diaphragm below the leading leading edge skin in the wing tank sections are plate webs with internal outflow and act as anti-surge baffles. Tanks are secured and converted to be leak-proof, but, as an additional precaution, the under surface is also covered with anti-surge membrane. Extensive lead and vibration tests have been made to ensure permanent fuel-tightness even with out this additional safeguard.

All sides of each tank are accessible and the interior of each can be reached through a manhole at its inner end. Fuel supply is taken from a large capacity inter- and provision is made both for pressure and gravity refueling.

In addition to the integral tanks, arrangements are made for fuel cells, with a capacity including 60 gal, in the outer section.

► **Tail Unit**—Structural features of the tail unit are similar to those of the wing. The continuous tail plane is a two-piece structure with pressed sheet ribs and is attached by lacing fittings to the fuselage. Fitted are interchangeable and board fair. Both the tailplane and the fin have thermal drain escape time-lag to those of wing.

► **Control Surfaces**—With the exception of the outer trailing-edge flaps, all movable surfaces are fabric covered.

► **The three ailerons** are directly interconnected, permitting use of a single tension spring tabs to lighten control movements. This tab is also used for positioning. Outer ailerons are interchangeable, and have small horn balances carrying mass-balance weights.

► **Adaptors** are each in three portions with universal couplings. Both ground and taxiing tabs are used.

► **There is a rigid connection** between the span of the two elevators, which have adjustable geared tabs and are mass balanced.

All the control surfaces other than the outer rudder, have slanted leading edges, and are sealed so that full pressure difference is available for aerodynamic balance.

► **Split trailing-edge flaps**, covering 25 percent of the wing chord, are mounted immediately ahead of ailerons. These are hydraulically operated through long-lever arms actuated by a latently acting push-pull rod. They can be set at any angle up to 50 deg. hours closed position.

► **Control System**—To minimize the effect of cable slack and to compensate for expansion difference in varying temperatures, a special control-cable system was developed.

Rack and pinion gear units at each end of the elevators and rudder control system provides a maximum of 1 in. at the control columns and rudder pedals to one of 25 in. in the main gear of the cables. These cables, consequently, carry a much smaller load, and a lighter and more flexible cable can be used to reduce static friction and other losses at the pulleys. A similar gearing system is used in the aileron control run, with screwdrives replacing the gear boxes at the control columns.

The control system has been laid out so that direct operating servo-motor type of electric automatic pilot may be installed without further modification.

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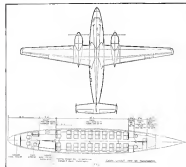
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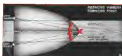
APPROACH AND RUNWAY



This lighting was first developed over 18 years ago by Barlow Branson, Inc., and with the cooperation of L.M. lighting engineers, has been steadily improved. During the war it was installed by the army and navy at hundreds of locations throughout the world. Pilots who flew in the Aleutians, Newfoundland, and other tough flying areas can tell you what Barlow lighting did to bring them in to safe landings.



3. Reduced visibility: the envelope of light shrinks (e.g., dim, etc.). Penetration of the high-wattage beam is reduced more than the low-wattage beam, and it strikes areas far away from the center line of the cavity. This lighting would be ineffective—the pilot must not see the lights, parts of the scene, or the cockpit position.



The Barrow system is the first high intensity lighting given full CAA approval—the only one light-rated and fully approved to date. This lighting, combined with approved instrument systems, gives maximum safety for all-weather airport operation.

5. Corrected Beam Direction, which lights "coned 18" toward the center line of the roadway illuminates the dark area, restoring the path of appeal brightness. Thus the combination of brightness control and beam direction control gives maximum penetration, without glare or halo.



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AIRPORT LIGHTING

1.2 *Introductory Resources: Ancient Mathematics Resources • Plane Geometry and Trigonometry • Lighting Resources • 3D Textiles • Poly Area Modeling*

Unique Rotor Affords New Safety

Design aims to minimize fatigue stresses and over-come roughness.

By GILES N. MONTGOMERY
(Engineering Staff, Deane-Fusser)

Although the helicopter is finding wider commercial utility every day, it is evident that problems still besetting this configuration have prevented its assuming its ultimate role. For example, the basic question of how many and what types of rotor and blades is still one of the primary subjects of discussion among engineers and designers.

Vying for attention in this area is the Deane rotor system. Deane-Fusser Helicopters, Inc. have not concerned themselves with the controversy of how many rotors the helicopter should support as in which of the many possible ways they shall be arranged, but rather with the basic concept of the rotor itself. Emerging from this research is a rotor which is new in approach and solution.

► Rotor System Characteristics—During the 15 hr already logged with the Deane rotor system, these observations have been made:

- No extra parts have needed replacement because of wear or failure. Parts have been changed however, because they did not perform in accordance with design calculations—wear of the, which may be expected in test aircraft.

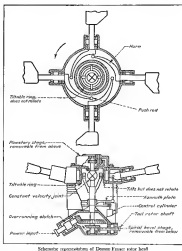
- The helicopter (Sikorsky HO4C) on which the Deane rotor has been installed has been repeatedly flown at sustained speeds as excess of 150 mph reaching 200 ft of disposable load. (The world's speed record for lighters is 114 mph—Sikorsky H-3.)

- Spins measurements of the rotor blade shank have been made in all regions of flight. A Goodman diagram made for these loadings indicates that as the motor of fatigue, the rotor blade life will be infinite.

- At 150 mph forward speed the vibration stress in the rotor blades is less than one tenth their endurance limit.
- The aircraft is without rotor induced vibration throughout the flight range and in all normal "copter maneuvers."

- There is no pilot control stick shake at any speed, and only finger tip pressure is required to guide the craft.

- The craft has been flown with center of gravity changes of as much as 15 in. with no changes whatsoever in the



stress on the blades or vibrations noted in the loading characteristics of the rotor.

- The substantiated characteristics are excellent.

- This is complete freedom from ground resonance.

- The rotor mechanism is simple enough in number of parts required in construction. All standardized parts may be easily made from castings or forgings. No forgings are required.

- The Deane rotor-equipped "copter" cannot be flown the light, periods lift off, and will not lift a greater load than are often well designed "copters."

- Capability of achieving a higher speed with the Deane rotor than with other designs of similar disk loading, power, and tip speed in due safety to the

structure of vibration and to low blade stress at high speed.

- **Rotor Problems**—General factors affecting rotor design and their relation to the Deane system are given in the following breakdown:

- **Control**—With one exception, all single lifting rotor "copters" require directional control by cyclic pitch change of the blades. Mechanisms are provided, which in effect will cause each blade, as it passes one side of the craft, to advance its pitch, and while it passes the other side to increase its pitch. Each blade will therefore have high lift on one side and low on the other. However, the blades are in rotating motion, and so are subject to gyroscopic phenomena. For this reason, if the point at which the blades experience their highest lift

be considered as a force applied to the rotor at one point, the entire whirling mechanism will respond in gyroscopic behavior by rotating a precessional tendency to tilt at 90 deg to the applied force.

By making available to pilot the ability to detect at what point about the craft the blades shall pass through the area of high and low lift, the lift vector of the rotor may be inclined in any direction relative to the fuselage C.G. This system provides an effective means for flight in any horizontal direction and is the system used on the Deane rotor.

Deane wanted not to strengthen this cyclic pitch change as many, but they all work down to becoming a flat pitch can whose magnitude and direction of inclination may be controlled by pilot. The individual blade is equipped with rotating mechanism so that as a pitch rod from the blade main shaft falls in its cycle path around the racheted cam the blade will increase and decrease its pitch. This cam is known as the *main pitch rod or flapblade*.

Another conception of achieving desired control is one in which the C.G. of the entire aircraft may be shifted relative to the rotor head. Our aircraft has repeatedly been flown by this method.

- **Attachment of Blades**—Although cyclic pitch change will effectively shift the center of lift relative to the hub and so tilt the craft, if the blades are rigidly attached many difficulties are encountered. The pendulum action of the blades will in itself place forces into the rotor which will materially impeded by tilting at 90 deg to the force. Consequently, pilot could, by increasing, learn which way to move his control stick to correct for this, but it would be an extremely tedious method.

A second consideration is the stress around that would occur in the blades every revolution when cyclic pitch is applied to blade's C.G. change in the forward. Under such conditions the blades would be racked upon to hold the craft in a given attitude by sheer bending which would cause as a pulsing movement every revolution.

One method must be employed so that the rotor load will not be affected by these dangerous conditions.

Most common type now from this problem is to provide each blade with a hinged shank at its root. The blades are then free to rise and fall at will (pitch). Centrifugal force acting on the rotating blade causes will tend to keep the blade out horizontal. Aerodynamic lift will tend to raise the blade.

The blades arrive at a curved position where these two forces balance. The shock bending moments in the blades due to supporting the craft are removed because the blades are now in pure tes-

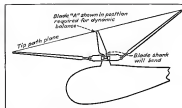


Diagram of member effect on four-blade rotor

tion in the vertical plane. The aircraft is supported in this way by the vertical component of the forces from on the rotor blades.

This is a very neat and simple solution, but it leads to a series of new and staggering problems, which will be weighed. It is not the method used in the Deane rotor system.

Another method of moving the rotor head from the aircraft is to keep the blades rigidly attached to a hub, and then attaching this hub to the craft with a universal joint. This is the scheme used on the Deane rotor. This system is also not without causing problems, but they are fewer, and new solutions have been found which are completely satisfactory.

- **Flipping Hinge Bearing**—Is a 2,500-lb "copter, the centrifugal force developed by each rotor blade will seek out to be in the neighborhood of 10,000 in. on one side. In these conditions, some irregularly distributed forces, which a bearing must be used on each blade, which can carry the heavy load. Such bearings are available. However, in action, the bearing conditions show about only 3 deg. The result is that a very small area of the bearing is actually used and service life is consequently short. Furthermore, these bearings must be in a certain situation throughout the life of the aircraft.

The problems of this rigid bearing characteristics. The problems of this bearing cannot be answered, a complete satisfactory solution has not been found as a hinge type rotor.

The problems do not arise in the Deane rotor because the radial movement of the rotor hub makes the flipping hinge unnecessary.

- **Control Effect**—With a rotor using a flipping hinge, the "copter" is forced to fly with the blade shank in a high point over the back of the craft. Were it a first blade helicopter the appearance would be as shown in the accompanying sketch, at the instant one

blade is closest to the observer. The fourth blade is not seen because it lies directly behind the blade destroyed. A

It is to be noted that the rest of the flipping hinges remain horizontal. This being the case, the only way blade A can manage to get into the position shown, and this is the position it must be in to be in dynamic balance, is for the blade shank to bend as indicated in the diagram. The forces that tend to bring blade A to this best position are very large since they exist from the great momentum of the blade which tends to keep it moving at constant angular velocity relative to the tip path plane.

This condition is true on a flipping hinge or on any type rotor of any number of blades, but it is most clearly shown on a four-bladed system. This periodic bending of the blade shank is so destructive that the rotor blades would soon come within of mechanical stresses even not taken. The form is so severe as to great that they cannot be safely moved by simply strengthening the blade.

It would seem that a "copter" with a specially mounted hub such as embodied the Deane rotor might be without the dynamic problems because the rotor hub will incline and remain parallel to the tip path plane, not bending of the blade shank is not necessary. Actually, the overall conditions also exist in the form of a universal joint problem. The greater the angle through which a universal joint is required to operate, the more severe will be the motion of the driven member. On a "copter" with a pivoted mounted hub, periodic acceleration and deceleration of the blades from this universal joint effect will cause stresses of severity similar to those encountered in a flip page hinge type, as a result of control.

To overcome this condition, one form of the pivoted mounted hub can

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Adaptable for analysis of aircraft materials and test cells, new portable carbon monoxide meter is announced by **Minco Safety Appliances Co.** Price, \$199.95. The CO-100 indicator meter developed by National Bureau of Standards, meter is capable of reading percentage of carbon monoxide from 0 (off) to 10 percent by volume in air. Nuclear fuel of monoxide is detected while emitting yellow silica gel, impregnated with complex silica-molybdenum compound and obtained via palladium sulfate. Beaded walls of tube are heated in tube burner and tube mounted in instrument tube holder. Sample of air is injected through tube by squeezing bulb, and if sample contains CO, yellow and orange chemical means varying shades of green, directly proportional to concentration. Degree of gel discoloration is then compared with integral revolving color scale for quick reading.

Socket Set Improved

The aircraft factory and repair base range, redesigned in new line of sockets and handles conforming to shape of hand as announced by **Stinson Tools Corp.**, Kenosha, Wis. Known as **Stap-on** 1-in. set, new sockets have been added to give new coverage for sizes 1 to 5. Units have been redesigned to make it easy to slide in male, easy engagement with ball in handle of driver. Improved set made up as for easier selection.

Radio Frequency Generator

The high production induction heating unit such as laminating gun or pot induction and solvent spray hardening, 50-watt RF generator and matching two-position work table is offered by **Westinghouse Industrial Electronics Div.**, plant 4, Baltimore 5, Md. Generator is assembled to outside all coated equipment, high voltage rectifier, protective device, oscillator tube, RF tank, and coupling elements in complete unit. Outstanding features are lightweight aluminum cabinet, oscillatory RF shielding to meet compliance with FCC radiation requirements, stepless power output control by grid control unit, fitted on for other maintenance, circuit fully protected from overloads, and large base center providing easy reading. Work table has stainless steel tank and complete fittings for two station operation. Multiple mounting bases are provided on set.

for easy installation of work-holding equipment. Table has dual fittings for ground and cooling water and two sets of heavy duty RF output terminals. Weighing approximately 1,000 lb., generator measures 144 x 68 x 66 in. high and operates on 230/500v, 3 phase, 60c current.

Water Battery Water

Of interest to small airport operators is new water desalination device designed to provide battery water from ordinary tap water high in mineral content. Shown as feasibility to make tap water chemically equivalent to distilled water, flow from faucet enters at bottom and works up through tank of fine beds of synthetic plastic like material. Leaves in ion exchange resin. In first bed, water is softened, in next and subsequent beds, acidulated and alkalized. Releasants removed are channel to include sodium, potassium, calcium, magnesium, iron, copper, and lead, with mineral and sulfate compounds, and chlorides. Made in **Profield Mfg. Co.**, Mendon, Conn., and consists of wall bracket, removable unit cartridge, and electrical stainless indicator to show when new cartridge is needed. Cost of desalinated water is represented as low cost per hundred gallons.



Aircraft Voltage Regulator

Intended to provide controlled voltage for electrically heated aircraft wind shields, voltage regulator is offered by **Westinghouse Electrical Corp.**, Avondale, Pa. Price, \$110.00. Model 1111, 1 kw, 3 phase, 208/115v, 4,000/3,000 rpm alternator. Panel is arranged with plug connector for ease of installation on aircraft engine, and all maintenance, testing, and adjustment can be performed at service bench. Unit weighs slightly over 6 lb.

Information Tips

Index, Index, Please

Collection of books, articles and studies in various fields of aviation industry are contained in **Aviation Index**, published by **Aviation Index Co.**, 1000 N. 1st St., Suite 100, St. Paul, Minn. 55101. **Aviation Index** is a directory of information on the aviation industry, including aircraft, engines, components, and services. It is published quarterly and is available in print and microfiche formats.

Aviation Resources

For general and specific information on aircraft, engines, components, and services, the **Aviation Index** is a valuable resource. It provides a comprehensive listing of companies, products, and services in the aviation industry. The index is organized by category, making it easy to find the information you need.

Cutting Fluid Data

Cutting Fluids for Better Machining, a new book published by **McGraw-Hill**, provides information on the selection and use of cutting fluids. The book covers a wide range of topics, including the properties of cutting fluids, their application, and the latest developments in the field. It is a valuable reference for anyone involved in metalworking.

For Airline Weight Applications

Technical data on aircraft weight and balance is provided in **Aviation Weight Applications**, a new book published by **McGraw-Hill**. The book covers the fundamentals of weight and balance, including the calculation of center of gravity, moment, and weight. It also provides information on the latest regulations and standards for aircraft weight and balance. The book is a valuable reference for anyone involved in aircraft design and operation.

Aviation Directory

A comprehensive directory of aviation companies and organizations is provided in **Aviation Directory**, a new book published by **McGraw-Hill**. The directory lists the names, addresses, and telephone numbers of over 1,000 companies and organizations in the aviation industry. It is a valuable resource for anyone looking for a company or organization in the field.

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personnel for these three important emergency functions which were largely performed by private pilots in the early years of World War II.

First Problem—The statement completely ignores the fact that many World War II pilots who would be readily available for any of these three important emergency functions within the next fifteen years would be flying for business or for pleasure, the pilot reserve may well be much less valuable in emergency than is indicated.

The report goes on to presume that the pilots of World War II, pointing out the numbers of pilots and machines down from personal aviation, the use of civil airports and ground facilities, the value of the civilian pilot training program, the worth of certain high speed, low altitude and light transport types and the contribution of private pilots in members of CAF.

Taproot Contributions—The Commission reports and put "taproot contributions" by the taproot to personal aviation, including governmental aviation, CPTP, war production contracts to personal plane manufacturers, airport improvements during the war, and the VA flight construction program under the GI bill of rights.

Pointing out that hundreds of thousands of military and civil pilots now have the biggest ready made reserve for personal and airport

facilities that has ever existed" the report says that this group will determine the near future of personal aviation, and that if they fail, in personal aviation, they might should be "an obvious, suitable way to airplane designers that a new airplane is needed which will provide more activity at a lower operating cost."

The Commission states that a leader in personal plane industry is of value to the Nation and "should be encouraged, by contribution of funds for reports, for recognition and leading facilities and for pilot, manufacturers and aircraft plane design." We believe that the appropriations to personal aviation for these purposes plus the very substantial financial assistance provided for veteran flight training, is sufficient," the report concludes.

Port Authority Cities Fields In Annual Statement

A statement that New York's International Airport will open at Idlewild next July came from Howard S. Callahan, chairman of the Port of New York Authority, in his annual report to the New York board of commissioners.

Callahan said that two large all-purpose hangars now under construction will be ready only in 1949 to augment the two hangars at the airport and provide necessary bus facilities.

Report for Port Authority also notes that negotiations with the Navy for civil aircraft use of Floyd Bennett field also was authorized by Callahan in the report.

The improvements demanded by

the Navy as its price for relinquishing the field steadily increased in quantity, quality, and estimated cost, ranging from \$167,000 to the fall of 1946 to \$1,250,000 at the conclusion of their negotiations with the Port Authority," the report said. "The Navy insisted on a 'gold plated' improvement program as its price for relinquishing the airport and eventually we were forced to abandon our efforts to use Floyd Bennett to alleviate the growing congestion on the ground and in the air at LaGuardia."

The statement's early release of preliminary bids under lease plans from the City of Newark (N.J.) will not open question a 10-year lease agreement between the City of Newark and the New York Port Authority covering Newark Airport.

Months later reports of Port Authority interest in Teterboro Air Terminal, an airport on Long Island in New York, said that the possibility of a move to a new field with the LaGuardia and Newark Idlewild claim. The matter has not yet reached the negotiation stage between the Authority and Teterboro management.

Piper to Close Ponca City Branch

Closing of the Piper Aircraft Corp branch assembly plant at Ponca City, Okla., is expected soon after Feb. 1, according to word received by the Ponca City Chamber of Commerce. W. Y. Piper, Sr., president, indicated that he expected the plant of 100 employees to close to close the plant and that there was little hope of its reopening due to the present status of the small plane market.

The Ponca City plant is now employing approximately 90 persons, since blimp planes from parts made at the new Rock Haves, Pa., Piper plant. The Rock Haves plant will continue in operation.

At one time last year, the Ponca City plant was employing more than 100 persons and was turning out from 60 to 90 aircraft a day. Piper officials estimated they had paid out from \$100,000 to \$500,000 in salaries, and approximately \$150,000 for plant improvements at the assembly plant which is located in Ponca City.

Wherry Is Newly Appointed Kansas Aviation Director

Reley R. Wherry, Topeka, wartime Air Force technical official, has been appointed aviation director of the Kansas Industrial Development Commission, succeeding S. F. Robertson, Hutchinson. The aviation director's post was established by the Kansas law statute last year.

\$3,000,000 Asked

Wisconsin State Representatives Commission will ask the 1949 state legislature \$3,000,000 to make 100,000 pounds in such local airports. Thomas K. Jochen, executive secretary, announced at a recent meeting with a committee of the legislature council. The representatives who may ask the legislature for a definite appropriation for Jan. 1 to June 30, 1949, for financing civil projects which could not be postponed.

The commission also will ask that the district salary be increased from \$1,000 to \$1,750 a year, and that its rising laws governing aerodromes be clarified to conform with federal law.

Floathouse Rescue

An overturned Locomobile 68R float plane, kept at Vancouver, B. C., pilot and his passengers about for nearly seven hours before they were rescued by a passing trapper, in that boat on the B. C. coast recently. Pilot W. B. Schermer and passenger Edna Schermer, of Alberta, claim to the Edna family of the overturned plane and burned paper money, including several \$10 bills and other paper and bits of clothing as a house (with) they were able to attract the trapper's boat. Schermer and his wife (and) into a 20 ft. wind at half float for his half from the boat when a sudden gust of wind forced the plane on its back.

Parachutes at All Times

All controversy over whether airplane passengers and pilots should wear parachutes is renewed in New York State with introduction of a bill in the state legislature at Albany recently, to require wearing of parachutes by persons in aircraft at all times above flight within the boundaries of that state. The bill has been referred to the judiciary committee, would have a two-month effect on charter airlines, non-scheduled operations, airlines and private fliers as well, and would probably cause a boom in the parachute industry also if it were passed.

\$4,000th Stinson

Sale of the 4,000th Stinson Vengeance, reported recently, from the Stinson division of Consolidated Vultee Aircraft Corp. The total volume of over three half of all four place planes and piston, with dollar value totaling more than \$25 million. Hugh W. Tall, Milwaukee, Wis., industrial machinery dealer, bought the plane, which he will to compete between his branches at Milwaukee, Allouez, Oshkosh, and Appleton, Wis. He is also planning Stinson dealer, make the sale.

BRIEFING FOR DEALERS & DISTRIBUTORS

DC-4 CONVERSION KITS—Perhaps a new high in stocking of parts for one airplane by one one has been reached by Industrial Associates, 377 S. Robertson Blvd., Beverly Hills, Calif., which has recently acquired through supplier purchase some 10 standardized kits for converting military Douglas DC-4s to commercial standards. Conversion kits are complete except for tests, rig and ballasts which are not standardized. Company says that its Douglas conversions in excess of 3,000 parts, washers, and also stock parts for Lockheed, Pratt & Whitney, Wright, Kinner, Warner, Scuffell, Eclipse, Thompson, Ross and Parachute aviation equipment. Fordham, C. May and Bernard J. Gies, partners in Industrial Associates, both were associated with Douglas during the war years. Prospect for immediate orders for the kits prompted their venture into the big plane modification kit field.

FLORIDA AIRCRAFT REGISTRATIONS—A new Florida law, effective Jan. 1, requires that all aircraft owned by Florida residents and operated regularly in the state must have Florida aircraft registration certificates in lieu of personal property tags. Flares are required through 35 state motor vehicle commissions with two place aircraft ranging from 55 to 75 feet of 7,000 lb. gross wt. at least, to \$25 for planes of 6,500 lb. gross wt. and less. Aircraft for sale are licensed at \$100 per 100 lb. up to maximum of \$100 for planes weighing 6,000 lb. or more. An additional 25-cent error charge is made on late registration. From late registration first go to Florida State Department Commission 30 percent of which are to be paid on state aviation projects. Residuals is distributed to counties.

GP-16 LUSCOMBE CONTINUES—Luscombe Airplane Corp., Dallas, advises that it is continuing to produce its GP-16 two-place Stinson Standard, all-metal plane selling for \$2,495 factory, and a 65 hp. Stinson Special at \$2,695. These, with four 85 hp. two-places tagged at \$2,995 and \$3,975, give the company no right model two-place line with what the company believes are the lowest priced all-metal two-places in the 65, 85 and 90 hp. categories.

ASKS WAITING PERIOD—Ray L. Wood, vice president and general manager of S. A. Long, Inc., Wichita, reports that his company has received government action to keep approximately two-thirds of its WA-9 aircraft stock of surplus aircraft parts, originally valued at \$63,000,000, by June 15, date of expiration of the Life of War Assets Administration. Wood says that a one to three year additional period should be allowed by Congress in order to be sure that the materials to be packed were not urgently needed later in view of world conditions.

SEARCHES AND RESCUE—Oregon State Board of Aeronautics is establishing a coordinated search and rescue system for planes reported missing in the state, using funds from state registration fees of pilots. State highway department, state police, state and national forestry services, sheriff, Army and Navy planes, CAF, Coast Guard, CNA, flight operators, Red Cross aircraft units, newspaper and radio stations are all tied into the plan which divides the state into search areas with a director for each zone. Under the plan search by air will be made as far as it can be as it is usually easy to fly.

SERVICE BY SNYDER—Snyder Aircraft Corp., Chicago Municipal Airport, has issued an attractive folder describing the comprehensiveness of service offered in the New Snyder hangar and shops to transport flies using Chicago Municipal Airport Free stoppage service to the nearest bus or train terminal, dining washstands and kitchen of shop, and parachute line inspection at the receiving place. The services are extra service that might be needed, are provided. Hangar storage is available in large available along with washing, making and accessory overhaul, as well as regular line servicing with gas and oil. The folder is being mailed to all tenants from who use Chicago Municipal Airport.

SKYWAY ONE TERMINAL—Grand Central Air Terminal, Glendale, Calif., is building for association in the western terminal of the Skyway One connecting transcontinental route for private flyers. Proximity of the field to downtown Los Angeles and Glendale, and extension of Los Angeles Municipal and Lockheed Air Terminal by scheduled airlines, is pointed out by Grand Central as reasons why the Skyway One second terminal should meet its western end at the Glendale Skyway. —ALEXANDER MacKIBBLY



Here a Cherry riveter pulls aluminum rivets in a typical kind of work, airplane assembly job.



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FINANCIAL

Nominal Security Quotations Reflect Plight of Non-scheds

Inability to estimate capital necessary to survive is cited as one reason many non-certificated carriers have had to leave the industry.

A steep plunge of the air transport industry—due non-certificated lines—is engineering its own particular financial difficulties at the present time. This is reflected in what should amount to nominal quotations for the securities of these companies.

It is possible that the plight of the segment of the industry has not received wider public notice due to the relatively limited visibility in securities.

Without exception, the securities of the publicly-held non-certificated carriers are traded at what is known as "over the counter" or unlisted markets. It is only after companies have become adequately "seasoned" with a record of sustained earnings and established an interest that their securities "graduate" to the listed exchanges such as the New York Stock Exchange and the New York Curb Exchange.

YET, many a company with a very laudable background whose securities received their first financial appraisal in the unlisted markets is actively trading on the "big board"—the N. Y. Stock Exchange. The example, the majority of such companies in the American Airlines and Transcontinental Airlines were first available in the "over-the-counter" markets. In these instances, substantial profits, many times as rapid returns, were realized.

It is the hope of making a financial killing by getting in on the ground floor that leads many investors and speculators to take risks in "unseasoned" securities of new enterprises. All too frequently, however, the risk factor is paid as high if not higher than the profit potentials. As a result it is not uncommon for heavy losses to be incurred in consequences of this type.

Loss Factors Considered—The last gut line has been a consistent one among the securities publicly marketed by the non-certificated carriers. In no case is there more than a single figure in the blue chip column, compared a higher rate last year than when first sold publicly. The accompanying table makes this historical record.

Most of these shares were sold in the spring of 1945 and during the first half

of 1946. The market atmosphere was very favorable for such issues. In the first place, aviation had wide popular appeal and effective endorsement had little resistance to economic or placing shares of these new companies. One factor even worked in its favor before the Civil Aeronautics Board that all that was necessary to sell these issues was to place the word "airline" in the corporate name of the company. There was little credit made by the investing public to discern the true financial condition of these companies.

New Series, Olden Fold—As with all speculative stock flotations, a few benefits the investing public and some, the others have their level losses and fold up in due time.

New Series, Olden Fold—As with all speculative stock flotations, a few benefits the investing public and some, the others have their level losses and fold up in due time.

One company, Airborne Cargo Lines, has completed its corporate entrance in the bankruptcy courts. Launched as Blount Air Freight Corp., this company subsequently changed its name to Airborne only in 1947. At that time Airborne's president stated that a "load of profit" was reported in 1947.

Expense Air—Later Airborne, through use of its offerings, recently reflected that it was having a serious financial problem and was in need of considerable assistance. This company's

stock, had had a spectacular history. Under the sponsorship of Van Alstyne, Noel & Co., 300,000 shares were sold in May, 1945, at \$1 per share and within a very short period were quoted around \$10 per share. All this was done without any record of past earnings on the part of the company. Current quotations are around 66 cents a share.

Taca Cited—Another interesting aviation company with the rather financing of Taca. To suggest its huge expense program, 500,000 shares of common stock, were sold at \$15.50. Shortly thereafter, these shares were quoted at around \$25—all without any benefit of profitable earnings. The current market bid is around \$1.75 per share.

It is fair to note, however, that the management complexion at present is completely changed and has very little relationship to its economic past. Early last year, the Western Hemisphere in fact secured a common role in the management of the company and has been reported as exhibiting various reasons. Among other things, highly respected Paul Richter was subsequently installed as president and chief executive officer.

With the entrance of the Western Hemisphere there were a number of major financial changes. To provide additional capital, \$5 million in new, 4 per cent convertible notes were sold. Of this amount, Western took \$200,000, Panair Corp. \$250,000 and others the balance. Various options on stock were also granted Western.

Possible the most important unit and the company, capable of demonstrating recent profitability in the non-certificated group does not appear in the accompanying table. That is, the Air and a large percentage of more than \$1 million debentures have been placed privately with certain investors.

There are many reasons why most of the non-certificated companies have fared differently. Certainly, a good deal of over-valuation of the capital requirements necessary to survive in modern

—Selig Mitchell

Market History

Non-certificated Air Carriers
Traded in Unlisted Markets

Date Sold	Company	Share Offered	Price per Share	Current Price	Percent Gain or Loss
Feb., 1946	Airborne Cargo Lines	175,000	\$1.75	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8
May, 1945	Blount Air Freight Corp.	300,000	1.00	66	3.8

AIR TRANSPORT

Certificated Lines Ask Monopoly On U. S. Governmental Air Travel

Air Transport Association opposes Air Force proposal which would permit uncertificated operators to participate in trans-Pacific movement of dependents.

By CHARLES ADAMS

A brief question of government policy toward certificated and uncertificated airlines has developed as the result of efforts by military officials to arrange trans-Pacific air transportation for about 2,000 dependents of Army personnel.

The Air Force proposed dividing the traffic among the two U. S. flag carriers flying the Pacific—Pan American Airways and Northwest Airlines—and two major uncertificated operators—Pacific Overseas Airlines and Transoceanic Air Lines. Admiral Eamon S. Lund, president of the Air Transport Association, has released W. Stuart Birmingham, Secretary of the Air Force, that "a determination of policy by the Air Force which would deprive the certificated carriers of needed traffic moving over their routes is contrary to the national interest."

► **New Rules Urged**—ATA urged the government to establish a policy of employing certificated carriers to perform essential government transportation "in every instance where the facilities of the certificated carriers are adequate to perform the service." The airline

group added that the government once its practice of employing noncertificated carriers for this purpose.

The Air Force recently called a meeting of the line carriers to outline its requirements for transporting 500 passengers a month from the West Coast to Tokyo, Okinawa, Manila and Cebu over a five-month period. It was also reported that the line carriers quote a rate per pound for the transportation.

► **Rate Limit**—Pan American and Northwest currently charge \$675 for a one-way trip from West Coast ports (San Angeles, San Francisco and Seattle) to Tokyo. Transoceanic and Pacific Overseas point out that a 10 percent rate reduction would enable the government to save \$150,000 on the movement of 2,000 passengers.

The two certificated carriers attacked the suggestion that they establish special fares for the Army, because they said it might be discriminatory and a violation of the Civil Aeronautics Act.

► **Vietnam**—General Adm. Lund told Senator Birmingham he did not consider

that the proposed trans-Pacific transport issue could be conducted legally by the uncertificated carriers on a contract basis. He also pointed out that uncertificated carriers are definitely barred from common carriage of passengers to foreign ports.

ATA and the Air Force's determination to arrange for low-cost air transportation conflicts directly with the government's price action in certifying Pan American and Northwest to the Orient. "Conceded to its logical conclusion, it will go far to thwart the purpose of such certification generally."

► **Double Clump**—ATA must be recognized that if the Air Force goes through with the proposed movement to the noncertificated carriers involved, the government will in effect be giving twice for the transportation. For some time both JMW and NWA will be in question support from the government through such aid. The Air Force now proposes to employ noncertificated carriers to transport a large block of traffic, thus depriving the certificated lines of revenue which otherwise would contribute to their total revenues, and would reduce the financial support which the government will otherwise be called on to pay.

Lund claimed that uncertificated carriers operate under "very limited and general safety regulations which do not match as severely the regulations applicable to certificated lines." He added, however, that he did not intend to assert that Pacific Overseas and Transoceanic conduct unsafe operations.

► **Impressive Records**—Both Pacific Overseas and Transoceanic built up impressive records in serving the armed forces on a contract basis during 1946 and the early part of 1947. In addition to flights for the Air Transport Command, both POW and TAL line one direct extensive contract services for various United States government agencies.

Pacific Overseas performed particularly well in service to the Pacific Air Force in UNRRA and Transoceanic is now engaged in transporting about 740 passengers monthly from the West Coast to Guam and Okinawa for essential national defense construction on those islands. They point out that the requirements of these services were more than could be met by existing schedules of the certificated carriers and that the operations were effected at a substantial saving to the government.

► **Delicate Aid**—In both military and commercial out-of-pocket operations Pacific Overseas and Transoceanic have flown a combined total of 277,000,000 passenger miles without major air crew injury or fatality. The two certificated lines contend it is the best testament of national defense for the government to continue to use air carriers which, by



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COMMERCIAL F4D0 LANDING

Photo shows Southwest Airways DC-6 making fast commercial F4D0 landing at Austin (Calif.) Landing Air Equipment Station. Visibility before F4D0 was 1/2 mi. After burn was 1/2 mi. plus. Color below burn was 75 ft., 300 ft. plus after burn. Fuel cost of burn was \$14.76 vs. \$47.64. About all at \$0.80/gal. On the day, despite unusual weather conditions, SWA completed all burns scheduled, made two F4D0 landings and three F4D0 takeoffs. Austin landing also used some radio range, compass locator, SC-91, GCA, approach and runway light intensity lights. Landing was made in darkness, 1947. F4D0 burn costs at Austin now range from \$14 to a maximum of \$151.

Some observers contend that PAM and Northeast actually could stand to benefit by accepting only part of the traffic involved in the HOME program. They reason that the Army dependent could be used to maintain a high load factor on regular military-carrying scheduled. But if extra tractors are known to handle the surplus Army traffic, the result traps the U.S. would probably be excessive deadweight.

Colonial to Receive Incentive Mail Pay

For each one percent increase in the passenger load factor above 95 percent (up to 67 percent) the actual rate will decrease 1.75 cents a phase mile to a maximum of 10 cents a phase mile. For each one percent decrease in the passenger load factor below 95 percent (down to 45 percent), the actual rate will

Since interest derived from a one per cent increase in the passenger load



WINTER OUTFITS

• **Traffic Gains**—Load factor on Connecticut routes from New York and Washington to Bermuda rose from 19 percent in August to 31.4 percent in September, 17.9 percent in October, 16 percent in November and an estimated

Latin American Lines Apply for U. S. Links

Two more Late American
Jewelry Shows in Colombia

General National de Colombia (W
anca), Bogotá, Colombia and Amos
Cast, Mexico City, International CA

Aerovias Giant has applied for a link to New York and for authority to make Miami an intermediate stop on a proposed service from Mexico City to Lisbon, Madrid, Paris and London via Bermuda and the Azores. The line plans to use Constellation.

American Overseas Boosts Operations

cluding winter robbery traffic, and inauguration of bus-Atlantic service in 1947.

At year's end ACIA operated a fleet of seven Coastliners and seven Deeps. In 1945 ACIA expects to place in service one or more double-deck Boeing Superliners of which eight are on order.

WAL Appoints James As Director of Safety

In its final report issued this month (Aviation Week, Jan. 12), the special board urged all airlines to name a full-time director of safety at a sufficiently high management level to enable prompt

observers without and planning to achieve a higher degree of inter-rater reliability has been on leave of absence for the past six months because of illness.

will report directly to W&A, president

T. C. Drakenter,
Other personnel details

■ Captain (P&A)—J. O. Urychek has been named manager of vessel events. He will be coordinator of all special events and will accept, in addition, PCR's charter responsibilities.

■ Northwest—Rayne Githens, former passenger traffic manager for Chicago's airlines, has been appointed director of

Alaskan Cargo Exemption Hit

Certificated airlines criticize benefits for "worst violators"

ingations to conduct aviation common carrier freight service between continental U.S. and Alaska pending determination of their applications for certification of public convenience and necessity. The contemplated new route from 2027 of CAE's Economic Region, provides a previously proposed route 2025, under which the freight has already been gained a term common carrier privileges to serve the Alaska region.

► **Opposition Forces—**For America Airways and Northwest Airlines, leading the opposition to section 292, FAA told CAR that its transportation section is illegal and estimated that it will see legislation work to confer benefits on the very carriers which have, PA claims, been among the worst violators of the Civil Aeronautics Act in the past.

operations on the Alaska Peninsula. North-western are only permitted to fish on "casual, occasional, infrequent and non-scheduled basis," certain of the curries have in fact flown more than daily across on a scheduled basis in some months. FAA declared A.T. America level and flight by a significant concern between Alaska and the Seattle police, numbered 195 in August 1985, 131 in September 1986 in October as 115 in November.

► **Violent as Condensed**—"No one living Seattle could believe there are as many corners contested between Alaska pilots and Seattle," FAA stated. "The natural impression gained is that scheduled [passenger and cargo] service available here at least 10 years ago."

[illegible]

CIO Wins Election

The American Communications Association (ACA) reports it has been chosen to represent TWA teletype operators, women flight radio officers and ground radio officers as the result of a recent National Mediation Board hearing election. The Airline Communications Employees Association (ACA affiliate) received 235 votes in 6 for the Skyline Association of Radio Operators, an independent union which has represented the employees for eight years.

operates usually as exactly the same
basis as Pan American (and North
west).

FAA and the only means CAB considering section 2027 is that Civil Aeronautics Act has not been delayed with respect to transportation between the U.S. and Alaska. "As these are issues that will be resolved the one course of considering had situation rather than the harder of

■ **Low Cabot-Fin** Airlines indicate that illegal operations by unauthorized persons accounted in part for its loss of over \$1,000,000 on U.S. Alaska service in the first 10 months of 1987. The certificated line said its load factor, including cargo, was less than 50 percent last year "with seats and cargo space going empty because traffic was being diverted off by services which should not have been authorized."

The unscrutinized operators take advantage of a lenient standard of safety requirements, Pan American told CA. "Illegal operators fly at higher gross loads, with lower fuel margins, less weather margins, no required rec checks for flight personnel, and no fire requirements as to radio sets. This makes a tremendous difference when traversed into crisis."

• Road Writ—In contrast, airports where congestion is rare won't. Either the fee can be so small or they make no effort to comply with traffic studies that would offend politicians. Last summer, class-action lawsuits resulted when Alaska Airlines reduced passenger fees for below-comparative rates.

For this reason, said the proposed regulation, the Alaska gas always carries a substantial risk of being uneconomical and unavailable, since 10 percent of the air usage available in the Alaska run is northbound. He added that the concentrated consumption inevitably would be forced to cause congestion to make a profit despite CAA's proposed prohibition against such operations by laws restricting the same operation.

► **Cayman** Nosed-Blown compares certificated in Alaska and 13 noncertificated lines which flew as or more than between Alaska and continental U.S. between Aug. 1, 1947, and Oct. 31, 1947, would be eligible for exemption under 202.7. Via American and. The certificated lines are: Northern Airlines, Mc Kinley Airways, Golden North Airlines, Trans-Alaska Airlines, General Air Cargo, Aerod Air Service, Standard Air Cargo, Eastern Air Service, Pearson-Media Airways, Pacific Alaska Express, Lacey Airways, Seaworld and

Alaska Airlines (represented within the territory) told CAR that proposed route 282.7 is one of the most cost-effective steps toward development of Alaska over routes by a government agency. Also looking more at airport service to Alaska were J. A. Kren, Secretary of the Interior, John Natchez, Assistant Secretary of the Navy, Ralph J. Rivers, Attorney General of Alaska and a number of merchants within the territory. They cited five important maritime strikes and undertakings and rail facilities as reasons to make this request.

► **New Traffic Sees-In its bid to** C&D Alaska Airlines said it was concerned that substantial northbound cargo traffic (mostly fresh fish and crab) can be developed. The company said that in October, 1947, it flew 104,000 tons of value of northbound freight in addition to 317,000 tons value of southbound cargo.

For Amersman and Northwest has failed to develop cargo on their routes where little competition exists. Alaska Airlines declined. "There performance in Alaska is typical of the overall failure to appreciate the possibilities of air cargo."

*In August, 1947, Alaska Airlines earned more cargo on its contract to irregular compass carrier operations between Alaska and the U. S. than was handled on the other domestic routes of Northwest Airlines in that month and more than was earned on PAA, Alaska, Pacific and Atlantic operations combined.

Some Short jottings for airline operators, charter companies, and V.I.P.s

Presenting the SEALAND...



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The Sealand, new 50-horsepower amphibian, is now coming off Short's production line. It's worthy of your attention whenever you are operating and whatever your aviation purpose. For the Sealand is the most adaptable, universally useful seaplane of its type ever designed. It's just the thing for charter companies and feeder lines. It is readily converted into a lightplane, an ambulance, a mobile classroom, or—as equipped in an office—a business man's transport. And it's so light and easy to handle on land or on water.

Getting down to it

Let's have a few estimated performance figures. The Sealand, at maximum economic cruising power—altitude 5,500 ft.—does 174 m.p.h. In cruise, at 107 m.p.h., it 775 m.p.h. with full tanks (150 gallons) and 50% fuel. With less fuel (45 gallons) it will carry 50% less of payload, which is roughly equivalent to 3 passengers and baggage, a range of 265 statute



Passenger will prefer the Sealand's comfortable seated position. Another 11 seats with better view—no uncomfortable seating and wide overhead.

miles. Take-off distance is only 175 yds. Up air smoothly from water, 570 yds. from land. Landing speed is 45 m.p.h., and service ceiling is 21,500 ft.

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IMMEDIATE DELIVERY!

TOP QUALITY AIRCRAFT PARTS!



AIRLINES AND FIXED-BASE OPERATORS...



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- Vibration Mounts
- Aircraft and Engine Accessories
- Aircraft Hardware
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- Aero Coupling Hose Assemblies
- Throttle Actuators—Clevis



CATALOGUE SENT ON REQUEST
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MANUFACTURERS OF AVIATION SUPPLIES
The S. A. LONG CO., Inc.
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EDITORIAL

Long Range Question

Next air transportation look always to the Federal government for action? Is it content to pile request upon request for more mail pay, and higher fares, yet demand that the government outlaw a mail by those who seek, to show-for free-whether it is possible to operate more efficiently at lower rates?

It appeared previous like Shick, the Flying Tigers and Wilbur to prove to the certified airlines how much cargo business could be sold by enough work. The major criticism of the Air Transport Association first "bids" out cargo rates to meet that competition, at the same time their own mail passenger rates and appealing to the government and the taxpayers for more mail money, and getting it. The independents, still without direct subsidy of any kind, manage to carry on.

The attitude of the public seems to be that if cheap, losses, unknown but wide-scale operation like the certificated, unregulated companies could lead to such new business, why couldn't the experienced, certificated carriers? There are not pretty questions. This is not one personal "dilemma." We advise these organizations the ATAA members have chafed on, but many taxpayers are asking, especially for answers. And it is idle to think they roll stop asking. Is there an outlook for air transportation except bigger and better government subsidies? And why, the active taxpayer asks, isn't the government giving a flat subsidy to those who claim they can do and serve the public without subsidy. Consider Santa Fe Airways.

Skyway was one of the most efficient certificated air freight lines, backed by an outstanding mail. It could operate for 15 because of the CAB's "subsidy to friendly airfare."

Yet Santa Fe Airways has been asked for any kind of government subsidy, or equipment development loan and in its efforts expressed themselves content to provide subsidy in the cargo field only, and offered a plan of an actual contribution that would have expedited freight to hundreds of communities without no service. Furthermore, Skyway's efforts, like those of the other outstanding air freight lines, would have generated air freight receipts to increase the amount of vitals of other air carriers.

As Skyway's parent company pointed out in its petition for consideration by CAB, the Airlines, Forces & Santa Fe is a vital participant in the economic life of hundreds of cities and towns along its 13,000 miles of mainline route in 32 states from Chicago to the Gulf and Colombia. Many thousands of businesses of all kinds, including the retail trades, finance, cattle raising, mining, lumbering and manufacturing, are in various degrees dependent upon the Santa Fe. Many of these communities were brought into being because of the existence of the railroad. The railroad's entire interest in air freight was stimulating an air cargo business through the rail system. There is no considerable evidence that the certificated airlines were benefiting as much as the Santa Fe's own airline subsidiary.

Skyway was backed by the assistance of a company with a net worth far exceeding that of the entire air transport industry.

"Because of the failure of the Civil Aeronautics Board for over one year to hear Santa Fe's comprehensive plan for participation in air cargo operations and because of the Board's action Dec. 5 denying later on common carrier rights to Skyway, there is but to the airline a going air transport

operation, with low-low and financial resources easily needed to help business and make sound the line of the air transport industry," one company spokesman said.

Santa Fe's program would have steadily brought into beneficial use many costly airports in an area where each about a third of the civil air in larger landing fields now give the limited service of refueling and air taxi. It would have done this without Federal aid.

Santa Fe flew 2,015,000 plane miles. In October it was flying freight at the rate of about 16,000,000 tons miles a year. Without common carrier authority Skyway found it necessary to refuse cargo that would in each freight brought in was covered by regular scheduled airline contract. It never had an accident in the air. Only one scheduled service flight was cancelled by mechanical failure since Skyway started July 31, 1949. It had 340 employees. Flying, and mechanical standards were high. "At a time when the airline is concerned to improve its pilot, a part of which is 200 to 300 percent increase in cost of flight, the CAB attitude toward Santa Fe does not represent thinking based on public interest," a spokesman commented.

At this point, we are not ready to advocate declaration of a policy permitting surface carrier full rights to operate alone. But we do agree with the President's Air Policy Commission when it says:

"If the Board finds that the public convenience and necessity does require long additional common carrier operations, we hope that it will give a right to the roads built up by use of those common carriers that have proven their ability to operate economically and efficiently and use their own resources more wisely."

We agree at this time with the Commission's recommendation "that the CAB prevent the control by surface carriers of the U.S. air transport system of any important aspect thereof." And we also agree when it says:

"We believe, however, that individual private surface carriers, desiring of developing air transport as a part of a coordinated service, should not be automatically prevented from such action simply on the grounds that they are surface carriers-at least so long as the model is the free use. We recommend that the Congress enact legislation clarifying these points."

The CAB has been defeated in its duty in the Santa Fe Skyway case. It has denied the hundreds of American people, mostly in the south, a right to air service for service and sales it is saving for the carriers on along with them who are that the Santa Fe's one was the "airline's" lost in the short. As long as Skyway operated properly even its reduced service it could have been considered a coordinated system. Under other legal restrictions might have kept it in experimental status. The continuation of the old law, as it is, denies that it was solving them of business the American transport was denied having for a day that Santa Fe was creating new business for the airlines.

Santa Fe Skyway, along nothing from the government, was coming business and industry. It was operating at a check on those who claim inability to perform to perform to adequate public service. Some day Congress must decide on some line of demarcation between the one evidence of high standards and those who claim that need some. Until it wants to solve problems through the public is not getting the most for its money.

ROBERT H. WOOD

The advertisement features a large, detailed illustration of a Sperry Gyroscope Company engine analyzer. The device is a rectangular metal box with a circular viewing window in the center. Above the box, a red banner with white text reads "FLUROSCOPE OF YOUR AIRCRAFT'S HEART...". Below the box, a circular inset shows a stylized heartbeat line. To the right of the box, the text "PROVIDED BY NEW SPERRY ENGINE ANALYZER" is prominently displayed. The background of the advertisement is dark, with a faint image of an aircraft in flight.

PROVIDED BY NEW SPERRY ENGINE ANALYZER

- The new Sperry Engine Analyzer will enable your flight engineer to keep his eye on the pulse of his engine—promptly signaling the slightest irregularity in engine function. In the analyzer indicates the flight engineer can examine at any time during flight, gauges that show the characteristics of engine function, ignition system, fuel injection, and synchronization between magnet and harmonic engine. These characteristics position detect, locate and identify the malfunctions and expediting followers that may occur during flight operation.
- When the airplane comes into the

airport, specific engine maintenance needs are already known based on automatic correction can then be made in minutes instead of the hours formerly required to locate the cause of malfunction. This results in an increased number of possible flying hours per day and greater reliability in meeting schedules.

- Our Aeronautical Department is all be glad to supply complete details.

Sperry Gyroscope Company



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 DIVISIONS: NEW YORK, CLEVELAND, NEW ORLEANS, LOS ANGELES, SAN FRANCISCO, DETROIT



*Tyrone Power, Cesar Romero
and Director Henry King*

on location in Mexico during
the filming of the 20th Century-
Fox technicolor picture

"CAPTAIN FROM CASTILE"

Cortex flies to Mexico

WHEN 20th Century-Fox undertook the filming of "Captain from Castile" *right where it happened* in the rugged mountains of Mexico, it faced some appalling transportation problems: four to six days' travel time between each of the three main locations, and an operating cost of \$60,000 a day!

But Henry King, director, simply added a 200-mph twin-engine Beechcraft Executive Transport to the staff. The trip between each location—Morelia, Uruapan and Acapulco—was reduced to 50 minutes! The Beechcraft flew actors, supplies and technicians between these historic "stages" on a moment's notice.

"The Beechcraft was all-important to us in making this picture," says Mr. King. And in many other American industries similar records are hung up by the Beechcraft Executive Transport every day. Its prime purpose is the quick and efficient transportation of personnel and materials on a company's own schedule and between a company's own selection of destinations, whatever they may be.

Nearly 400 corporations are saving time and money with Beechcraft transportation. For a catalog describing this twin-engine Beechcraft, just write today on your business letterhead.

Beech Aircraft

CORPORATION



WICHITA, KANSAS, U. S. A.

